CLAIMS

What is claimed is:

1. A mobile station executed method for changing from a current cell to a new cell in a wireless packet data network, comprising:

    entering the new cell;

    generating a cell change packet data unit (PDU) message for informing the network of the location of the mobile station in the new cell;

    buffering the cell change PDU message into a PDU transmit queue before any buffered PDUs that were present before the mobile station entered the new cell; and

    transmitting the buffered cell change PDU before any of the buffered PDUs that were present before the mobile station entered the new cell.

2. A method as in claim 1, wherein the step of transmitting includes a preliminary step of requesting an uplink resource for transmitting the cell change PDU.

3. A method as in claim 1, wherein the step of transmitting includes a preliminary step of requesting an uplink Temporary Block Flow (TBF) for transmitting the cell change PDU.

4. A method as in claim 1, wherein the wireless packet data network, in response to receiving the cell change PDU, transmits downlink PDUs for the mobile station into the new cell.

5. A method as in claim 1, wherein the generated cell change PDU is transmitted only if a first PDU in the transmit queue exceeds a predetermined length, otherwise the cell change PDU is discarded and the first PDU in the transmit queue is transmitted instead.

6. A method as in claim 1, wherein the wireless packet data network is comprised of a General

Packet Radio Service (GPRS) network, wherein the PDUs are Logical Link Control (LLC) PDUs, and where the cell change LLC PDU has a length that fits within one Radio Link Control (RLC) data block.

7. A method as in claim 6, wherein the step of generating operates a LLC unit to use a Service Access Point Indicator (SAPI) of a GPRS Mobility Management (GMM) unit to form an empty GMM PDU, and where a mobile station location update procedure is triggered by a Serving GPRS Support Node (SGSN) when the GMM PDU is received.

8. A method as in claim 6, wherein a Radio Link Control/Medium Access Control (RLC/MAC) unit initiates an uplink Temporary Block Flow (TBF) in the new cell, and indicates to a RLC/MAC of the network if an ACK or an UNACK RLC mode is to be used when transmitting the cell change PDU.

9. A method as in claim 8, wherein the RLC/MAC unit of the mobile station selects either the ACK or the UNACK RLC mode based on the RLC mode of a next queued LLC PDU in the transmit queue.

10. A method as in claim 1, wherein the step of generating includes setting a priority level of the cell change PDU such that the step of buffering the cell change PDU message into the PDU transmit queue causes the cell change PDU to be transmitted before any lower priority PDUs.

11. A mobile station comprising a packet data buffer and a controller that is responsive to changing location from a previous cell to a new cell in a wireless packet data network for generating a cell change packet data unit (PDU) message for informing the wireless packet data network of the presence of the mobile station in the new cell and for buffering the cell change PDU message into the packet data buffer such that it is selected for transmission prior to any buffered PDUs that were present before the mobile station entered the new cell, said mobile station comprising a transmitter for transmitting the buffered cell change PDU for informing the wireless packet data network of the cell in which the mobile station is currently located so that packet data intended for the mobile station is not transmitted into the previous cell by the wireless packet data network .

12. A mobile station as in claim 11 wherein the controller, prior to operating said transmitter for transmitting the buffered cell change PDU, requests an uplink resource for transmitting the cell change PDU.

13. A mobile station as in claim 11 wherein the controller, prior to operating said transmitter for transmitting the buffered cell change PDU, requests an uplink Temporary Block Flow (TBF) for transmitting the cell change PDU.

14. A mobile station as in claim 11, wherein the generated cell change PDU is transmitted only if a first PDU in the transmit buffer exceeds a predetermined length, otherwise the cell change PDU is discarded and the first PDU in the transmit queue is transmitted instead.

15. A mobile station as in claim 11, wherein the wireless packet data network is comprised of a General Packet Radio Service (GPRS) network, wherein the PDUs are Logical Link Control (LLC) PDUs, and where the cell change LLC PDU has a length that fits within one Radio Link Control (RLC) data block.

16. A mobile station as in claim 15, wherein said controller, when generating the cell change PDU, operates a LLC unit to use a Service Access Point Indicator (SAPI) of a GPRS Mobility Management (GMM) unit to form an empty GMM PDU, and where a mobile station location update procedure is triggered by a Serving GPRS Support Node (SGSN) when the GMM PDU is received.

17. A mobile station as in claim 15, wherein said controller operates a Radio Link Control/Medium Access Control (RLC/MAC) unit to initiate an uplink Temporary Block Flow (TBF) in the new cell, and to indicate to a RLC/MAC of the network if an ACK or an UNACK RLC mode is to be used when transmitting the cell change PDU.

18. A mobile station as in claim 17, wherein the RLC/MAC unit of the mobile station selects either the ACK or the UNACK RLC mode based on the RLC mode of a next queued LLC PDU in the transmit buffer.

19. A mobile station as in claim 11, wherein controller sets a priority level of the cell change PDU such when buffering the cell change PDU message into the PDU transmit queue the cell change PDU is caused to be transmitted before any lower priority PDUs.

20. A method for informing a Serving General Packet Radio Service (GPRS) Support Node (SGSN) of a wireless network that a Mobile Station (MS) has made a cell change, comprising:

> changing from a first cell to a second cell with the MS; and

> prior to the SGSN receiving a communication from the MS, notifying the SGSN of the MS cell change.

21. A method as in claim 20, wherein the communication is comprised of at least one of a Packet Data Unit (PDU) and a message.

22. A method as in claim 20, wherein the step of notifying comprises steps of:

> in response to the MS making access in the second cell, sending a Channel Request that indicates a Cell Update operation;

> establishing an uplink (UL) Temporary Block Flow (TBF) for transferring Logical Link Control (LLC) Packet Data Units (PDUs) from the MS to the network;

> in response to the network receiving an unknown Temporary Logical Link Identifier (TLLI) from the MS, sending a message to the SGSN; and

> based on the message, determining with the SGSN the that the MS is located in the second cell.

23. A method as in claim 22, wherein the TLLI is received in a Packet Resource Request message, in the case of a two phase access, or in a first Radio Link Control (RLC) data block, in the case of a one phase access.

24. A method as in claim 20, wherein the step of notifying occurs in response to the MS being assigned a TDMA frame number of when to make the cell change.

25. A method as in claim 20, wherein the step of notifying occurs in response to the network receiving a Radio Link Control/Medium Access Control (RLC/MAC) message from the MS.

26. A method as in claim 20, wherein the step of notifying occurs in response to the network receiving a Temporary Logical Link Identifier (TLLI) from the MS.

27. A method for organizing packet data units (PDUs) into a transmit queue, comprising:

passing a PDU to a Radio Link Control (RLC) unit, the PDU having a flag for indicating a priority of the PDU relative to other PDUs;

storing the PDU into the transmit queue in accordance with the indicated priority; and

transmitting the stored PDU to a radio channel before any stored PDUs having a lower priority.

28. A method as in claim 27, where the RLC unit is associated with a mobile station, where the PDU is a cell change PDU, and where the cell change PDU is assigned a highest priority.